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Notice of Allowability	Application No.	Applicant(s)	
	10/802,419	VAN GELDER ET AL.	
	Examiner	Art Unit	
	Jessica L. Reidel	3766	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Applicant's Amendment of January 16, 2007.
2. ☒ The allowed claim(s) is/are 1-36.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. <input type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____ |
|---|--|

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Paul H. McDowall on February 16, 2007.

The application has been amended as follows:

At Claim 1, line 8, immediately after "d) determining whether", "adequate" was deleted.

At Claim 1, line 20, immediately after "in the event that", "inadequate" was deleted.

In the newly submitted Abstract of January 16, 2007, line 1, "The disclosure enables efficient" was deleted and -- Efficient -- was inserted.

In the newly submitted Amendment to the Specification of January 16, 2007, paragraph 2, line 3, immediately after "issued 22 March 2005", -- as U.S. Patent No. 6,871,096 -- was inserted.

In the newly submitted Amendment to the Specification of January 16, 2007, paragraph 2, line 8, immediately after "filed 17 March 2004", -- now U.S. Patent No. 7,181,284 -- was inserted.

In the newly submitted Amendment to the Specification of January 16, 2007, paragraph 2, line 13, immediately after "THERAPY," -- , now abandoned -- was inserted.

Allowable Subject Matter

2. Claims 1-36 are allowed.

3. The following is an examiner's statement of reasons for allowance: Hill discloses an apparatus and computer-readable medium that carry out a method of bi-ventricular, fusion-pacing therapy delivery to a non-synchronous pair of ventricles, including delivery of a single ventricular pacing pulse to a relatively late activated ventricular chamber to promote mechanical synchrony between the late activated ventricular chamber and a relatively more rapid, intrinsically conducting ventricular chamber comprising measuring an intrinsic atrio-ventricular AV delay interval for a first-to-depolarize ventricular chamber (V1, right ventricle) for at least one prior cardiac cycle and delivering during a subsequent cardiac cycle at least one ventricular pacing pulse to a second-to-depolarize ventricular chamber (V2, left ventricle). Hill also discloses that the ventricular pre-excitation pacing pulse is delivered at the expiration of a V2 pacing interval, wherein the V2 pacing interval is temporally shorter than the intrinsic atrio-ventricular AV delay interval of the V1 chamber (see Hill column 16, lines 43-67, column 17, lines 1-5 and column 19, lines 24-54). Hill further discloses that the ventricular pacing pulses are pre-excitation pacing pulses (see Hill column 7, lines 1-15).

Ding discloses an apparatus and computer-readable medium 10, 12 (see Ding Fig. 1) that carry out a method of bi-ventricular, fusion-pacing therapy delivery to a non-synchronous pair of ventricles, including delivery of a single ventricular pre-excitation pacing pulse to a relatively late activated ventricular chamber to promote mechanical synchrony between the late activated ventricular chamber and a relatively more rapid, intrinsically conducting ventricular chamber (see Ding page 3, paragraphs 16-18) comprising measuring an intrinsic atrio-ventricular AV

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delay interval for a first-to-depolarize ventricular chamber (V1, right ventricle) for at least one prior cardiac cycle and delivering during a subsequent cardiac cycle at least one ventricular pre-excitation pacing pulse to a second-to-depolarize ventricular chamber (V2, left ventricle). Ding also discloses that the ventricular pre-excitation pacing pulse is delivered at the expiration of an AV delay interval AVD, read as a V2 pacing interval, wherein the V2 pacing interval is temporally shorter than the measured intrinsic atrio-ventricular AV delay interval of the right ventricular chamber (see Ding Fig. 3 and page 6, paragraph 40).

Neither the Hill reference nor the Ding reference, however, discloses or fairly suggest an apparatus for delivering LV-only fusion-pacing therapy to promote mechanical synchrony between a right ventricular (RV) chamber and a left ventricular (LV) chamber, that comprises:

means for measuring an intrinsic atrio-ventricular delay interval for a right ventricular (RV) chamber for at least one prior cardiac cycle;

means for delivering during a subsequent cardiac cycle at least one pacing pulse to a LV chamber, where the pacing pulse are delivered at the expiration of an A-LVp interval, and wherein the intrinsic atrio-ventricular (P-R) interval is greater than said A-LVp interval; and

means for measuring and substantially maintaining a LEPARS interval during the LV-only fusion pacing therapy where the means for measuring and substantially maintaining a LEPARS interval,

a) measures an intrinsic P-R cardiac interval for a RV chamber for at least one prior cardiac cycle; b) decrements the P-R interval to derive a nominal A-LVp interval; c) delivers an LV-only pacing therapy using the nominal A-LVp interval and d) determines whether adequate ventricular fusion resulted, and in the event that adequate ventricular fusion resulted, then:

i) measures a LEPARS interval by the amount of time elapsed between the delivery of the LV-only pacing therapy and a subsequent sensed depolarization of the RV; and

ii) delivers during a subsequent cardiac cycle at least one LV-only pacing therapy pulse to a left ventricular (LV) chamber, wherein said at least one LV-only pacing therapy pulse is delivered at the expiration of an A-LVp interval that preserves heart rate response requirements and substantially preserves the LEPARS interval; and

in the event that inadequate ventricular fusion failed to result, then: modifies the A-LVp interval and repeating step c) through step d), where the modified A-LVp interval is implemented in lieu of the nominal A-LVp interval.

4. The references of the prior art fail to show or teach *all* of the Applicant's claimed invention and fail to show or teach any obviousness type improvement over the prior art and as a result, the Examiner deems these claims and their depending claims to be allowable over the prior art [emphasis added].

5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


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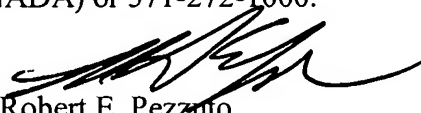
Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessica L. Reidel whose telephone number is (571) 272-2129. The examiner can normally be reached on Mon-Thurs 8:00-5:30, every other Fri 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pezzuto can be reached on (571) 272-6996. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Jessica L. Reidel 02/16/07
Examiner
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